

MALATHION

FYFANON[®] ULV

INSECTICIDE



**BEFORE USING
THIS PESTICIDE
STOP
READ THE LABEL**

ULTRA LOW VOLUME CONCENTRATE INSECTICIDE

CHEMINOVA

Active ingredient:

Malathion** 96.8%

Inert ingredients 3.2%

****O,O-dimethyl phosphorodithioate of diethyl mercaptosuccinate
(1 gallon contains 9.9 pounds of malathion)**

KEEP OUT OF REACH OF CHILDREN

CAUTION

Harmful by swallowing, inhalation or skin contact

Avoid breathing spray mist • Avoid contact with skin • Do not contaminate food or feed products

IN CASE OF A MEDICAL EMERGENCY, CALL TOLL FREE, DAY OR NIGHT, AREA CODE 800-228-5635, Ext. 153

FIRST AID

This product is an organophosphate and is a cholinesterase inhibitor.

If swallowed: Call a physician or poison control center immediately. Induce vomiting by giving 1 or 2 glasses of water and touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person.

If inhaled: Remove victim to fresh air immediately.

If on skin: Wash affected areas with soap and water.

If in eyes: Flush with water for at least 15 minutes and get medical attention.

NOTE TO PHYSICIAN: This material is a cholinesterase inhibitor. Treat symptomatically. Atropine is an antidote.

See side panels for additional precautionary statements.

Product of Denmark

CHEMINOVA - Lemvig - Denmark

Phone: 97 83 41 00 - Telex: 66514 - Telecopier 97 83 45 55

EPA Reg. No.: 4787-8

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS (& DOMESTIC ANIMALS)

Harmful by swallowing, inhalation or skin contact. Avoid breathing spray mist. Avoid contact with skin. Do not contaminate food or feed products.

PERSONAL PROTECTIVE EQUIPMENT: Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category F on an EPA chemical-resistance category selection chart.

Applicators and other handlers must wear:

- Long sleeved shirt and long pants
- Chemical-resistant gloves, such as Barrier Laminated, or Butyl Rubber, or Nitrile Rubber, or Viton
- Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

ENGINEERING CONTROLS STATEMENTS: When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

ENVIRONMENTAL HAZARDS

This product is toxic to fish. Keep out of lakes, streams, ponds, tidal marshes and estuaries. Do not apply where runoff is likely to occur. Do not apply when weather conditions favor drift from areas treated. Do not contaminate water by cleaning of equipment, or disposal of wastes. Shrimp and crab may be killed at application rates recommended on this label. Do not apply where these are important resources. This pesticide is highly toxic to bees exposed to direct treatment or to residues remaining on the treated area. Do not apply when bees are actively visiting the crop, cover crop, or weeds blooming in the treated area. Apply this product only as specified on this label.

PHYSICAL OR CHEMICAL HAZARDS

Before using, read the directions contained in this leaflet for the proper methods and procedures which must be followed to achieve effective insect control and avoid permanent damage to automobile and other paint finishes.

DISCLAIMER

The label instructions for the use of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Crop injury, automobile paint damage, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of CHEMINOVA. All such risks shall be assumed by the user.

CHEMINOVA warrants only that the material contained herein conforms to the chemical description on the label and is reasonably fit for the use therein described when used in accordance with the directions for use, subject to the risks referred to above.

Any damages arising from a breach of this warranty shall be limited to direct damages and shall not include consequential commercial damages such as loss of profits or values or any other special or indirect damages.

CHEMINOVA makes no other express or implied warranty including any other express or implied warranty of FITNESS or MERCHANTABILITY.

The sale of this product does not include a license under any patent owned by CHEMINOVA.

User Safety Recommendations:

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

STORAGE: FYFANON ULV should be stored at temperatures not exceeding 25°C (77°F). It should never be heated above 55°C (131°F), and also local heating above this temperature should be avoided.

PESTICIDE DISPOSAL: Pesticide, spray mixture or rinse water that cannot be used according to label instructions may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Metal Containers—Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other approved state and local procedures.

MOSQUITO CONTROL IN POPULATED AND RURAL AREAS

IMPORTANT NOTICE: TO BE APPLIED ONLY BY TRAINED PERSONNEL OF PUBLIC HEALTH ORGANIZATIONS, MOSQUITO ABATEMENT DISTRICTS OR PEST CONTROL OPERATORS.

AERIAL APPLICATION

ADULT MOSQUITO CONTROL OVER CITIES, TOWNS AND OTHER AREAS WHERE AUTOMOBILES, TRAILERS, TRUCKS AND PLEASURE BOATS ARE PRESENT: Apply 2.6 to 3.0 fluid ounces of FYFANON ULV per acre. Apply only when weather conditions are favorable. Wind and rising air currents may cause undesirable spray drift and reduce insect control.

IMPORTANT—Undiluted spray droplets of FYFANON ULV will permanently damage vehicle paint finishes unless the aircraft used for the ultra low volume application meets all of the specifications listed below:

FIXED WING AIRCRAFT

1. Aircraft is operated at 150 mph or more.
2. There are no leaks in the ultra low volume spray system.
3. Nozzles are placed on the boom at a 45° angle down and into the wind.
4. Diaphragm check valves are used on all nozzles to insure positive cut-off of the spray.
5. Dosage of FYFANON ULV does not exceed 3 fluid ounces per acre.
6. The spray system produces droplets of this product in the 50 to 60 mass median diameter (MMD) micron range, with no more than 10% of the droplets exceeding 100 microns, as determined by readings made from microscope slides coated with DRI-FILM[®] or TEFLON[®].

HELICOPTER

Equipment specifications

1. Rotary nozzle equivalent to Beecomist Spray Head Assembly Model No.350 equipped with:
 - a. a direct reading RPM tachometer or low RPM signal light readily visible to operator;
 - b. a stainless steel porous metal sleeve, 20 micron pore size, dynamically balanced to the nozzle;
 - c. a diaphragm check valve as near to the rotary nozzle as possible to insure positive cut-off of the spray;
 - d. nozzle on-off switch separate from main switch and pump switch.
2. Minimum no-load nozzle speed of 10,500 RPM.
3. A continuous nonpulsating metered flow must be maintained by a variable speed metering pump equipped with:
 - a. a positive cut-off valve between tank and pump;
 - b. a flow gauge or tachometer visible to operator;
 - c. a pump on-off switch separate from main switch and nozzle switch.
4. Maximum flow rate of 0.5 gallon per minute per nozzle.
5. Rotary nozzle must be mounted behind and below the boom with the sleeve directed toward the rear of the aircraft and parallel to the ground during flight. Nozzle must be positioned to minimize air turbulence and the collection of FYFANON ULV droplets on mounting brackets, feed lines, fittings, etc., or any part of the aircraft.

OPERATING PROCEDURES

6. FYFANON ULV must be prefiltered through a 10 micron filter prior to transfer into helicopter tank. A 50 mesh stainless steel line strainer must be installed in the pump feed line.
7. Entire system, including tank, pump, nozzle and feed lines, to be used only for application of FYFANON ULV.
8. Entire system must be inspected daily to insure that there are no leaks.
9. Sleeve must be removed and cleaned immediately after each use by washing with hot water and blowing dry from outside in with clean air.
10. Rotating nozzle must be turned on and operating before turning on pump. For shut-off, pump must be shut off and lines cleared prior to stopping nozzle rotation.
11. Dosage of FYFANON ULV does not exceed 3 fluid ounces per acre.
12. The spray system must produce droplets of FYFANON ULV with a mass median diameter (MMD) of less than 50 microns, with no more than 2.5% of the droplets exceeding 100 microns, as determined by readings made from microscope slides coated with DRI-FILM[®] or TEFLON[®].

GROUND APPLICATION

Thermal Aerosols or Fogs

For control of adult mosquitoes with thermal aerosols or fogs, apply FYFANON ULV at the rate of 6-8 oz. actual/gallon (3.9-5.2 gallons FYFANON ULV in 100 gallons finished solution*) by ground equipment delivering 40 gallons per hour at a vehicle speed of 5 miles per hour to treat a swath width of 300-400 feet.

* There is a great variation in the chemical composition of fuel oils which may be used as thermal fog solvents. These differences may cause sludge and/or affect the solubility of the FYFANON ULV.

Nonthermal Aerosols

Adult Mosquito Control—For control of adult mosquitoes over a 300-foot swath with nonthermal aerosols of FYFANON ULV using the following rates at the indicated vehicle speeds:

Vehicle Speed Rate per Hour	Flow Rate of FYFANON Fluid Ounces per Minute	Maximum Flow Rate per Hour
5	1.0 to 2.1 fluid ounces	1 gallon
10	2.0 to 4.3 fluid ounces	2 gallons
15	3.0 to 6.3 fluid ounces	3 gallons
20	4.0 to 8.6 fluid ounces	4 gallons

Adult Stable Fly Control—For control of adult stable flies over a 300-foot swath with nonthermal aerosols of FYFANON ULV using the ultra low volume method, use the following flow rates at the indicated vehicle speeds:

Vehicle Speed Rate per Hour	Flow Rate of FYFANON Fluid Ounces per Minute	Maximum Flow Rate per Hour
5	2.1 fluid ounces	1 gallon
10	4.3 fluid ounces	2 gallons

DROPLET SIZE

1. The Mass Median Diameter (MMD) of the droplets should not exceed 17 microns. The MMD is the drop diameter which divides the spray volume into two equal parts; i.e., 50% of the volume is in the drop sizes below the MMD and 50% is above the MMD.
2. Spray droplets should not exceed 32 microns in size. Three percent of the spray droplets (6 droplets out of 200) can exceed 32 microns providing the MMD does not exceed 17 microns and no droplets exceed a maximum of 48 microns. Larger droplets, when transported by natural air currents, impinge more readily on objects in their pathway and will permanently damage automobile-type paints.
3. More than one-half of the total spray mass must consist of droplets in the 6 to 18 micron range to achieve adequate dispersal of insecticide over a 300-foot swath.
4. A minimum of two-thirds, preferably four-fifths of the total spray mass must consist of droplets not exceeding 24 microns in range.

OPERATING EQUIPMENT

Each Nonthermal Aerosol Generator used for the dispersal of FYFANON ULV to control adult mosquitoes must have minimum capability of producing the droplet spectrum described under DROPLET SIZE. The initial determination of droplet size is made after the unit is installed in a vehicle and prior to its use in mosquito control operations. The unit should be rechecked as frequently as necessary to insure that proper droplet size is maintained for each operation. Determination of droplet size every two months is usually sufficient if the unit has been maintained in good operating condition. Equipment manufacturer's instructions setting forth cleaning and maintenance of the unit must be followed. The unit must be inspected before each operation to correct any leaks or obstructions in the spray system; to detect whether the nozzle, hoses, or other parts are worn and need replacement; to insure that the flow meter is properly calibrated; and to determine that the pressure recommended by the manufacturer is being maintained.

Flow Rate	<ul style="list-style-type: none"> - must be regulated by accurate flow meter - not greater than 1 gallon per hour at 5 mph, 2 gallons per hour at 10 mph, 3 gallons per hour at 15 mph or 4 gallons per hour at 20 mph
Nozzle Direction	<ul style="list-style-type: none"> - rear of the vehicle - upward at an angle of 45° or more
Vehicle Speed	<ul style="list-style-type: none"> - not greater than 20 miles per hour - shut off spray equipment when vehicle is stopped
IMPORTANT	<ul style="list-style-type: none"> - Spray droplets of undiluted FYFANON ULV will permanently damage automobile paint unless all the conditions described and recommended in this leaflet are met.

Directions for determining the droplet size of FYFANON ULV nonthermal aerosols

Permanent records of each droplet size determination must be kept and made available to CHEMINOVA, upon request.

I. Preparation of Slides with DRI-FILM¹

FYFANON ULV droplet sizes are determined by depositing a sample of the aerosol on a coated glass slide and measuring the droplets under a high-power microscope. Ordinary 3" x 1" glass slides must be coated with silicone (General Electric SC-87 DRI-FILM)¹ prior to sampling to prevent excessive spreading or coalescence of the droplets. The slides are dipped into a 10 percent solution of DRI-FILM¹ in toluene, drained and dried at about 200°F, for 30 minutes, after which they are dipped in acetone, allowed to dry and stored in a tight slide box. Coating solution must be freshly prepared. Do not store coating solution because it will deteriorate. Slides are lightly polished with a soft tissue before using to remove any foreign particles.

II. Deposition of FYFANON ULV Droplets on Slides

Droplets should be collected under ideal operating conditions to insure representative sampling of droplets in the aerosol. A sample of the FYFANON ULV aerosol is deposited on a slide by waving the slide as rapidly as possible perpendicular through the aerosol cloud at a distance of 25 feet from the point of discharge. The slide velocity may be increased by attaching it to a 3 or 4 foot stick by means of a spring paper clip. At least two slides should be exposed to insure an adequate sample. Store slides in a tight slide box for transfer to a location where measurements can be made. Avoid excessive heat during transit and store in a cool place until measurements can be made.

Although label specifications require the aerosol nozzle to be angled upward at 45° or more during operation, it is more convenient to position the nozzle parallel to the ground for droplet sampling. If this is not possible it will be necessary to be positioned at a sufficient height to obtain a representative sample of the aerosol.

III. Determination of FYFANON ULV Droplet Sizes

A microscope with mechanical stage and an eyepiece micrometer are used to determine the size of the individual aerosol droplets. Prior to taking measurements, the divisions of the eyepiece micrometer must be calibrated into microns by means of a stage micrometer. In the example represented in Table 1, droplets were measured at 400x magnification. At that magnification each division of the eyepiece was calibrated to equal 3.5 microns.

At least 200 droplets should be measured. Usually this is easily accomplished on one slide. An accurate method is to measure all droplets that pass through the micrometer scale as the slide is moved from one edge to the other by using the mechanical stage. Measurements should not be taken along the margins of the slide. It is more convenient to measure in terms of the divisions of the eyepiece micrometer and then convert these divisions into microns.

The measurements converted into microns must then be corrected for the amount of spread that occurred on the slides. The FYFANON ULV spread factor for silicone-coated slides is 0.5. Therefore, in Table 1 each division of the eyepiece actually equals 1.75 microns (3.5 microns times the 0.5 spread factor).

The spread factor for TEFLON²-coated slides is 0.69. The following procedure as given for silicone-coated slides, would be the same for TEFLON²-coated slides once the value for each eyepiece division has been determined.

The measurements are tabulated and processed as in Table 1. The Maximum Diameter is calculated by converting the diameter of the largest droplet measured into microns. In Table 1, the largest droplet measured had a diameter of 19 eyepiece divisions. Therefore, the Maximum Diameter is 33.3 microns (19 x 1.75 = 33.3).

To determine the Mass Median Diameter (MMD), the accumulative percentages from the last column in Table 1 are plotted against the eyepiece divisions (D) on arithmetic probability paper as in Figure 1. Directly across from the 50 percent point on the line is the median droplet size in eyepiece divisions which must be converted to microns. In Figure 1, 9.2 eyepiece divisions times the conversion factor of 1.75 equals a Mass Median Diameter of 16.1 microns.

Table 1

Representative Count of FYFANON ULV Aerosol Droplets Impinged on Microscope Slides Coated with DRI-FILM¹:

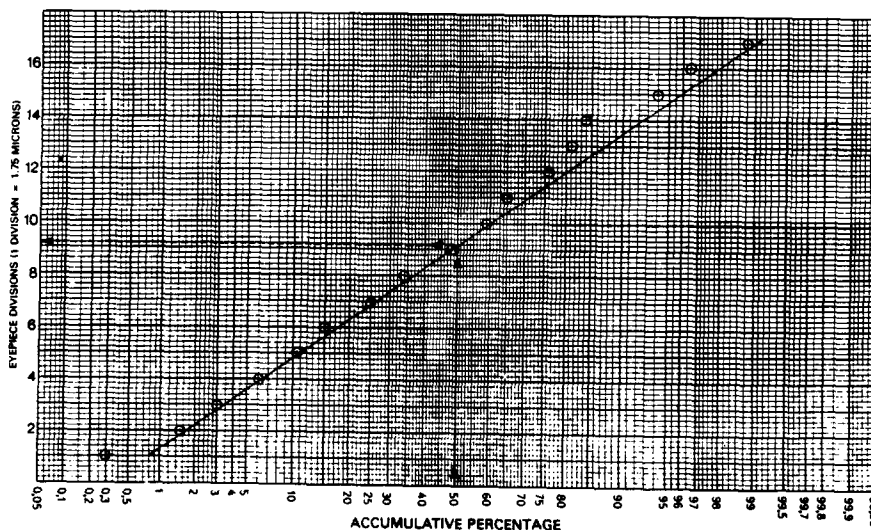
Eyepiece Divisions (D)*	Number of Droplets (N)	DXN	% of Total DXN Σ (DXN)	Accumulative Percentages
1	5	5	0.31	0.31
2	10	20	1.22	1.53
3	9	27	1.65	3.18
4	12	48	2.93	6.11
5	15	75	4.58	10.69
6	12	72	4.40	15.09
7	25	175	10.70	25.79
8	14	112	6.85	32.64
9	28	252	15.40	48.04
10	19	190	11.61	59.65
11	14	154	9.41	69.06
12	10	120	7.33	76.39
13	6	78	4.77	81.16
14	4	56	3.42	84.58
15	11	165	10.09	94.67
16	2	32	1.96	96.63
18	2	36	2.20	98.83
19	1	19	1.16	99.99
TOTAL	199	1636		

*Measurements were taken at 400x magnification.
Each eyepiece division equals 1.75 microns
(3.5 microns times the 0.5 spread factor).

Also for use in accordance with the recommendations and instructions issued by the United States Department of Agriculture for quarantine programs. To be used only by or under the direction of Federal/State personnel for quarantine treatments.

Figure 1.

Percentage of the total volume of aerosol samples below each stated droplet size (from Table 1). The Mass Median Diameter is determined from the 50 percent point on the line. The Mass Median Diameter (MMD) = 9.2 divisions times 1.75 = 16.1 microns.



**F
O
R

M
O
S
Q
U
I
T
O

C
O
N
T
R
O
L**



Oak Hill Park
1700 Route 23, Suite 210
Wayne, NJ 07470

® FYFANON is a registered trademark of Cheminova

1. Trademark of General Electric Company

2. Registered Trademark of E.I. duPont de Nemours & Co. Inc.